

General

Guideline Title

Guideline for environmental cleaning.

Bibliographic Source(s)

Wood A, Conner R. Guideline for environmental cleaning. In: 2015 guidelines for perioperative practice. Denver (CO): Association of periOperative Registered Nurses (AORN); 2013 Sep. p. 9-30. [109 references]

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

Note from the Association of periOperative Nurses (AORN): Although these recommendations include references to cleaning a wide variety of surfaces, the focus of this document is specific to the environmental cleaning of perioperative areas. These recommendations may be applicable to sterile processing areas. Laundering of textiles is outside the scope of these recommendations. Environmental cleaning includes considerations for a safe environment of care, prevention of transmissible infections, and hand hygiene. These topics are addressed in separate recommended practices documents, and although they are mentioned briefly where applicable (e.g., standard precautions), broader discussions are outside the scope of this document.

- I. A multidisciplinary team should establish cleaning procedures and frequencies in the perioperative practice setting.
- II. The patient should be provided with a clean, safe environment.
- III. A clean environment should be reestablished after the patient is transferred from the area (Schulster et al., 2003; "Practice guidance for healthcare environmental cleaning," 2012; 42 Code of Federal Regulations [CFR] 416, 2011; 42 CFR 482, 2011).
- IV. Perioperative areas should be terminally cleaned.
- V. All areas and equipment that are not terminally cleaned should be cleaned according to an established schedule.
- VI. All personnel should take precautionary measures to limit transmission of microorganisms when performing environmental cleaning and handling waste materials.
- VII. Procedures for environmental cleaning and disinfection should be established for circumstances that may require special cleaning procedures (i.e., multidrug-resistant organisms, *Clostridium difficile*, prion diseases, construction, environmental contamination).
- VIII. Perioperative and environmental services personnel should receive initial and ongoing education and competency verification on their understanding of the principles and the performance of the processes for environmental cleaning in perioperative areas (Kak, Burkhalter & Cooper, 2001).
- IX. Policies and procedures for environmental cleaning processes and practices should be developed, reviewed periodically, revised as

necessary, and readily available in the practice setting.

- X. Perioperative personnel should participate in a variety of quality assurance and performance improvement activities that are consistent with the health care organization's plan to improve understanding of and compliance with the principles and processes of environmental cleaning.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Any condition requiring the use of surgical and other invasive procedures

Guideline Category

Prevention

Clinical Specialty

Nursing

Preventive Medicine

Surgery

Intended Users

Advanced Practice Nurses

Nurses

Guideline Objective(s)

To provide guidance for environmental cleaning and disinfection in the perioperative practice setting

Target Population

Patients undergoing surgical and other invasive procedures

Interventions and Practices Considered

1. Establishment of cleaning procedures and frequencies in the perioperative practice setting by a multidisciplinary team
2. Provision of safe clean environment for the patient
3. Reestablishment of a clean environment following patient transfer from area
4. Terminal cleaning of perioperative areas
5. Cleaning of other areas equipment according to an established schedule
6. Precautionary measures to limit transmission of microorganisms during environmental cleaning and handling waste materials
7. Establishment of special cleaning procedures for circumstances that require it

8. Initial and ongoing education and competency verification of environmental service personnel
9. Development and periodic review of policies and procedures for environmental cleaning
10. Participation of perioperative personnel in quality assurance and performance improvement activities

Major Outcomes Considered

- Selection of appropriate cleaning chemicals, materials, tools, and equipment
- Ongoing education and competency verification
- Policies and procedures
- Quality assurance
- Performance improvement processes

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Evidence Review

A medical librarian conducted systematic searches of the databases MEDLINE, CINAHL, and the Cochrane Database of Systematic Reviews for meta-analyses, systematic reviews, randomized controlled and nonrandomized trials and studies, opinion documents, case reports, letters, reviews, and guidelines. Scopus was also consulted, although not searched systematically.

Search terms included: operating room, operating theater, operating suite, surgical suite, recovery room, post-anesthesia, post-anaesthesia, perioperative nursing, ambulatory care facilities, surgicenters, ambulatory surgery, outpatient surgery, healthcare facilities, terminal cleaning, terminal disinfecting, terminal decontamination, cleaning schedule, cleaning program, cleaning regimen, prior patient, prior room occupant, previous patient, cleaning standard, cleaning policies, cleaning guideline, cleaning protocol, routine cleaning, hospital housekeeping, housekeeping department, environmental services, cross infection, infection control, decontamination, room decontamination, disinfection, disinfectants, adenosine triphosphate, detergents, solvents, phenols, disinfectants, hydrogen peroxide, ultraviolet rays, fluorescent light, quaternary ammonium disinfectant, sodium hypochlorite, ozone, silver, copper, gram-negative bacteria, gram-positive bacteria, viruses, *Staphylococcus aureus*, methicillin resistance, vancomycin, multi-drug resistant organism, clostridium, chickenpox, measles, varicella, rubeola, tuberculosis, prion diseases, prions, Creutzfeldt-Jakob, disease reservoir, dust, surgical wound infection, blood, body fluids, tissues, blood spill, semen, cerebrospinal fluid, synovial fluid, vaginal secretions, pericardial fluid, peritoneal fluid, saliva, amniotic fluid, air microbiology, air pollution, bacterial load, microbial colony count, environmental microbiology, environmental cleaning, green cleaning, mop, mopping, bucket, wringer, brush, buffers, floor machine, sweepers, microfiber, microfibre, paper towel, cloths, wiping, vacuum, environmental surface, contact surface, fomites, floors and floor coverings, interior design and furnishings, mites, lice, fleas, cockroaches, vermin, flies, ants, insects, pest control, textiles, bedding and linens, beds and mattresses, curtains, laundry, laundry service, cellular phone, cellphones, cell phones, telephones, wireless communications, mobile devices, iPad, tablets, laptops, computer systems, computers, keyboards, mouse, tables, beds, operating tables, mattress, stretcher, examination tables, patient transfer board, trolleys, carts, scrub sink, durable medical equipment, disposable equipment, equipment reuse, storage areas, hospitals, eye wash, operating room waste, clinical waste, medical waste, medical waste disposal, biohazardous waste, hazardous materials, formaldehyde, formalin, methyl methacrylate, storage, disposal, transport, handling, safety management, occupational health, occupational-related injuries, occupational exposure, contact precautions, standard precautions, droplet precautions, universal precautions, eye protective devices, masks, respiratory protective devices, protective clothing, gloves, goggles, gowns, environmental monitoring, luminescent measurements, checklists, visual inspection, fluorescent light, audit, tacky mat, sticky mat, hospital design and construction, demolition, construction materials, aspergillus, aspergillosis, central service department, sterile processing, sterile supply, central supply, central processing, task performance and analysis, job performance, competency-based education, continuing education, and human factors.

The search was originally limited to literature published in English between 2008 and 2013. The lead author and the medical librarian identified relevant guidelines from government agencies and standards-setting bodies, and the lead author requested additional articles that either did not fit

the original search criteria or were discovered during the evidence appraisal process. The medical librarian also established continuing alerts on the environmental cleaning topics and provided relevant results to the lead author.

Number of Source Documents

475 articles met the inclusion criteria and were included in the review.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

I: Randomized controlled trial (RCT) or experimental study, systematic review of all RCTs

II: Quasi-experimental study, systematic review of quasi-experimental studies or combination of quasi-experimental and RCTs

III: Non-experimental studies, qualitative studies, systematic review of non-experimental studies, combination of non-experimental, quasi-experimental, and RCTs, or any or all studies are qualitative

IV: Clinical practice guidelines, position or consensus statements

V: Literature review, expert opinion, case Report, community standard, clinician experience, consumer experience, organizational experience (quality improvement, financial)

Methods Used to Analyze the Evidence

Systematic Review

Description of the Methods Used to Analyze the Evidence

Articles identified by the literature search were provided to the project team for evaluation. The team consisted of the lead author, three members of the Recommended Practices Advisory Board, and two doctorally prepared evidence appraisers. The lead author divided the search results into topics and assigned members of the team to review and critically appraise each article using the Johns Hopkins Evidence-Based Practice Model and the Research or Non-Research Evidence Appraisal Tools as appropriate. The literature was independently evaluated and appraised according to the strength and quality of the evidence. Each article was then assigned an appraisal score.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

The collective evidence supporting each intervention within a specific recommendation was summarized and used to rate the strength of the evidence using the Association of periOperative Registered Nurses (AORN) Evidence Rating Model. Factors considered in review of the collective evidence were the quality of research, quantity of similar studies on a given topic, and consistency of results supporting a recommendation.

Rating Scheme for the Strength of the Recommendations

1: Strong Evidence: Interventions or activities for which effectiveness has been demonstrated by strong evidence from rigorously-designed studies,

meta-analyses, or systematic reviews, rigorously-developed clinical practice guidelines, or regulatory requirements.

- Evidence from a meta-analysis or systematic review of research studies that incorporated evidence appraisal and synthesis of the evidence in the analysis.
- Supportive evidence from a single well-conducted randomized controlled trial.
- Guidelines that are developed by a panel of experts, that derive from an explicit literature search methodology, and include evidence appraisal and synthesis of the evidence.

1: Regulatory Requirement: Federal law or regulation.

2: Moderate Evidence: Interventions or activities for which the evidence is less well established than for those listed under "Strong Evidence."

- Supportive evidence from a well-conducted research study.
- Guidelines developed by a panel of experts which are primarily based on the evidence but not supported by evidence appraisal and synthesis of the evidence.
- Non-research evidence with consistent results and fairly definitive conclusions.

3: Limited Evidence: Interventions or activities for which there is currently insufficient evidence or evidence of inadequate quality.

- Supportive evidence from a poorly conducted research study.
- Evidence from non-experimental studies with high potential for bias.
- Guidelines developed largely by consensus or expert opinion.
- Non-research evidence with insufficient evidence or inconsistent results.
- Conflicting evidence, but where the preponderance of the evidence supports the recommendation.

4: Benefits Balanced With Harms: Selected interventions or activities for which the Association of periOperative Registered Nurses (AORN) Recommended Practices Advisory Board (RPAB) is of the opinion that the desirable effects of following this recommendation outweigh the harms.

5: No Evidence: Interventions or activities for which no supportive evidence was found during the literature search completed for the recommendation.

- Consensus opinion

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

The Recommended Practices for Environmental Cleaning have been approved by the Association of periOperative Registered Nurses (AORN) Recommended Practices Advisory Board. They were presented as proposed recommendations for comments by members and others. They are effective November 15, 2013.

Evidence Supporting the Recommendations

References Supporting the Recommendations

42 CFR 416: ambulatory surgical services. U.S. Government Printing Office; 2011.

42 CFR 482: conditions of participation for hospitals. U.S. Government Printing Office; 2011.

Kak N, Burkhalter B, Cooper MA. Measuring the competence of healthcare providers. Operations research issue paper (1). [internet]. Bethesda (MD): Quality Assurance Project for the U.S. Agency for International Development; 2001 [accessed 2013 Sep 30].

Practice guidance for healthcare environmental cleaning. 2nd ed. Chicago (IL): Association for the Healthcare Environment; 2012.

Schulster L, Chinn RY, CDC, HICPAC. Guidelines for environmental infection control in health-care facilities. Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC) [Published errata appear in MMWR Recomm Rep 2003 Oct 24;52(42):1025-6]. MMWR Recomm Rep. 2003 Jun 6;52(RR-10):1-42. [419 references] [PubMed](#)

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified for selected recommendations (see the "Major Recommendations" field). See the full guideline document for systematic review and discussion of evidence.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate practices for environmental cleaning to prevent the of the spread of potentially pathogenic microorganisms and reduction of the risk of surgical site infection

Potential Harms

Not stated

Qualifying Statements

Qualifying Statements

- These recommended practices represent the Association's official position on questions regarding optimal perioperative nursing practice.
- No attempt has been made to gain consensus among users, manufacturers, and consumers of any material or product.
- Compliance with the Association of periOperative Registered Nurses (AORN) recommended practices is voluntary.
- AORN's recommended practices are intended as achievable and represent what is believed to be an optimal level of patient care within surgical and invasive procedure settings.
- Although they are considered to represent the optimal level of practice, variations in practice settings and clinical situations may limit the degree to which each recommendation can be implemented.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Tool Kits

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Safety

Identifying Information and Availability

Bibliographic Source(s)

Wood A, Conner R. Guideline for environmental cleaning. In: 2015 guidelines for perioperative practice. Denver (CO): Association of periOperative Registered Nurses (AORN); 2013 Sep. p. 9-30. [109 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2013 Sep

Guideline Developer(s)

Association of periOperative Registered Nurses - Professional Association

Source(s) of Funding

Association of periOperative Registered Nurses (AORN)

Guideline Committee

Association of periOperative Registered Nurses (AORN) Recommended Practices Advisory Board

Composition of Group That Authored the Guideline

Lead Author: Amber Wood, MSN, RN, CNOR, CIC, CPN, Perioperative Nursing Specialist AORN Nursing Department, Denver, Colorado

Contributing Author: Ramona Conner, MSN, RN, CNOR, Manager, Standards and Recommended Practices, AORN Nursing Department, Denver, Colorado

Team Members: Philip Carling, MD, Department of Clinical Medicine, Boston University School of Medicine, Department of Infectious Diseases, Carney Hospital, Boston, Massachusetts; George Allen, PhD, MS, RN, CNOR, CIC, Director Infection Control, Downstate Medical Center and Clinical Assistant Professor, SUNY College of Health Related Professions, Brooklyn, New York; Marcia R. Patrick, MSN, RN, CIC, Association for Professionals in Infection Control and Epidemiology liaison to the AORN Recommended Practices Advisory Board and Independent Consultant, Tacoma, Washington; Lisa Spruce, DNP, RN, ACNS, ACNP, ANP, CNOR, Director of Evidence-based Perioperative Practice, AORN, Inc, Denver, Colorado; Elayne Kornblatt Phillips, PhD-BSN, MPH, RN, International Healthcare Worker Safety Center, University of Virginia, Charlottesville; Janice A. Neil, PhD, RN, Associate Professor and Chair, Department of Undergraduate Nursing Science, College of Nursing, East Carolina University, Greenville, North Carolina

Financial Disclosures/Conflicts of Interest

No financial relationships relevant to the content of this guideline have been disclosed by the authors, planners, peer reviewers, or staff.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available to subscribers from the [Association of periOperative Nurses Web \(AORN\) site](#) .

Print copies: Available for purchase from the [AORN Web site](#) .

Availability of Companion Documents

An environmental cleaning toolkit is available from the [Association of periOperative Nurses Web site](#) .

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on April 17, 2014. The information was verified by the guideline developer on May 7, 2014.

Copyright Statement

This NGC summary is based on the original guideline, which is subject to the guideline developer's copyright restrictions.

Disclaimer

NGC Disclaimer

NGC Disclaimer

The National Guideline Clearinghouse^{â„¢} (NGC) does not develop, produce, approve, or endorse the guidelines represented on this site.

All guidelines summarized by NGC and hosted on our site are produced under the auspices of medical specialty societies, relevant professional associations, public or private organizations, other government agencies, health care organizations or plans, and similar entities.

Guidelines represented on the NGC Web site are submitted by guideline developers, and are screened solely to determine that they meet the [NGC Inclusion Criteria](#).

NGC, AHRQ, and its contractor ECRI Institute make no warranties concerning the content or clinical efficacy or effectiveness of the clinical practice guidelines and related materials represented on this site. Moreover, the views and opinions of developers or authors of guidelines represented on this site do not necessarily state or reflect those of NGC, AHRQ, or its contractor ECRI Institute, and inclusion or hosting of guidelines in NGC may not be used for advertising or commercial endorsement purposes.

Readers with questions regarding guideline content are directed to contact the guideline developer.